

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)
2. (Currently Amended) The An apparatus for cooling a motor
of claim 1, further comprising:
5 a motor housing with an upstream side and a downstream side;
 a shaft disposed within the motor housing;
 an inlet hole in the motor housing;
 an outlet hole in the motor housing;
 the inlet hole arranged in the same radial plane as the outlet hole;
 an air guide plate formed to channel air from the inlet hole, over an
10 outer surface of the shaft, and radially outward through the outlet hole;
 an impeller; and
 a bearing housing on the downstream side of the impeller.
3. (Original) The apparatus of claim 2, further comprising a bearing seal on the downstream side of the bearing housing.
4. (Original) An apparatus for cooling a motor, comprising:
5 a motor housing with an upstream side and a downstream side;
 a shaft;
 an inlet hole in the motor housing;
 an outlet hole in the motor housing;
 a rotor mounted on the shaft;

the inlet hole arranged in the same radial plane as the outlet hole;
and

an air guide plate;
10 the air guide plate formed to channel air from the inlet hole, over
an outer surface of the shaft, and into the rotor.

5. (Original) The apparatus of claim 4, wherein the rotor
comprises a plurality of rotor fins.

6. (Original) The apparatus of claim 4, wherein the rotor directs
air radially outward through the outlet hole.

7. (Original) The apparatus of claim 4, wherein the radial plane is
perpendicular to the axis of the motor housing.

8. (Original) An apparatus for cooling a motor, comprising:
a motor housing with an axis, an upstream side, and a
downstream side;
a shaft having a cylindrical outer surface;
5 a bearing housing supporting the shaft;
a bearing seal on the downstream side of the bearing housing;
a plurality of through inlet holes formed in the motor housing;
each of the plurality of through inlet holes arranged in the same
radial plane;
10 a rotor mounted on the shaft; and
a plurality of air guide plates;
each of the air guide plates formed to channel air from each of the
plurality of through inlet holes, adjacent the bearing seal, over the outer
cylindrical surface of the shaft, and into the rotor.

9. (Original) The apparatus of claim 8, wherein the radial plane is perpendicular to the axis of the motor housing.

10. (Original) The apparatus of claim 8, wherein the rotor comprises a plurality of rotor fins.

11. (Original) The apparatus of claim 10, wherein the rotor comprises a centrifugal blower to accelerate air in a radially outward direction.

12. (Original) The apparatus of claim 8, further comprising a plurality of through outlet holes, arranged in the same radial plane as the through inlet holes.

13. (Currently Amended) An apparatus for cooling a motor, comprising:

a motor housing with an upstream side and a downstream side;

a shaft having a cylindrical outer surface;

5 an impeller mounted on the shaft;

a plurality of rotor fins axially spaced downstream from the impeller, and the plurality of rotor fins projecting radially outward from the cylindrical outer surface of the shaft;

a plurality of through inlet holes formed in the motor housing;

10 a plurality of through outlet holes formed in the motor housing;

each of the plurality of through outlet holes arranged in the same radial plane; and

a plurality of air guide plates;

15 each of the air guide plates formed to channel air radially inward from a through inlet hole, over the outer cylindrical surface of the shaft, into the plurality of rotor fins, and radially outward through a through outlet hole.

14. (Original) The apparatus of claim 13, wherein each of the plurality of through inlet holes are arranged in the same radial plane.

15. (Original) The apparatus of claim 14, wherein the plurality of through inlet holes are arranged in the same radial plane as the plurality of through outlet holes.

16. (Original) The apparatus of claim 13, wherein the shaft comprises aluminum.

17. (Original) The apparatus of claim 13, wherein the impeller comprises aluminum.

18. (Original) A motor, comprising:
a die cast aluminum motor housing with an upstream side and a downstream side;
an impeller on an aluminum shaft; the shaft coaxial with the motor
5 housing;
the shaft having a cylindrical outer surface;
a bearing housing on the downstream side of the impeller;
a bearing seal on the downstream side of the bearing housing;
a plurality of rotor fins projecting radially outward from the
10 cylindrical outer surface of the shaft;
a plurality of through inlet holes formed in the motor housing;
the plurality of through inlet holes arranged in the same radial
plane;
a plurality of through outlet holes formed in the motor housing;
15 each of the plurality of through outlet holes arranged in the same
radial plane;

each of the plurality of through inlet holes arranged in the same radial plane as each of the plurality of through outlet holes; and

a plurality of air guide plates;

20 each of the air guide plates formed to channel air from each through inlet hole, over the cylindrical outer surface of the shaft, and into the plurality of rotor fins.

19. (Original) The motor of claim 18, wherein each through outlet hole is located in between two through inlet holes.

20. (Original) The motor of claim 18, wherein each air guide plate is formed such that air from each through inlet hole flows adjacent to the downstream side of the bearing seal.

21. (Currently Amended) A method for cooling a motor, comprising:

5 providing a motor housing and a shaft housed within the motor housing, the shaft having a rotor disposed thereon, the rotor including a plurality of rotor fins projecting radially outward from an outer surface of the shaft;

providing a through inlet hole in the motor housing;

providing a through outlet hole in the motor housing; ~~and~~

directing air radially inward through the through inlet hole ~~[[.]]~~ and into the ~~motor housing rotor~~; and

10 directing air radially outward through the through outlet hole;

wherein the through inlet hole and the through outlet hole are in the same radial plane,

wherein the radial plane is perpendicular to the axis of the motor housing.

22. (Canceled)

23. (Currently Amended) The method of claim 22 21, wherein the rotor accelerates air radially outward through the through outlet hole.

24. (Original) The method of claim 21, wherein air is directed radially inward through a plurality of through inlet holes in the motor housing.

25. (Original) The method of claim 24, wherein air is directed radially outward through a plurality of through outlet holes in the motor housing.

26. (Original) The method of claim 23, wherein air is directed over the surface of the shaft before accelerating air radially outward through the through outlet hole.

27. (New) The apparatus of claim 13, wherein the plurality of rotor fins extend axially from the rotor.

28. (New) An apparatus, comprising:
a motor housing with an upstream side and a downstream side;
a shaft disposed within the motor housing;
an inlet hole in the motor housing;
5 an outlet hole in the motor housing;
the inlet hole arranged in the same radial plane as the outlet hole;
a rotor disposed on the shaft, the rotor including a plurality of rotor fins projecting radially outward from an outer surface of the shaft; and
an air guide plate extending radially inward from the inlet hole to
10 the rotor, wherein:
the air guide plate is adapted to channel air radially inward from the inlet hole into the rotor,
the rotor fins are adapted to accelerate air radially outward from the rotor and through the outlet hole; and

15 the rotor fins are disposed downstream of the air guide plate.

29. (New) The apparatus of claim 28, wherein the plurality of rotor fins extend axially upstream from the rotor.

30. (New) The apparatus of claim 28, further comprising:
 an impeller mounted on the shaft at a location upstream of the inlet hole, wherein the air guide plate is disposed downstream from the impeller.

31. (New) The apparatus of claim 30, wherein the rotor fins are spaced axially downstream from the impeller.

32. (New) The apparatus of claim 28, wherein the inlet hole comprises a plurality of inlet holes circumferentially spaced on the motor housing.

33. (New) The apparatus of claim 32, wherein:
 the outlet hole comprises a plurality of outlet holes circumferentially spaced on the motor housing, and
 each said outlet hole is disposed between a pair of the inlet holes.

34. (New) The apparatus of claim 28, wherein the apparatus comprises a turbine, an engine, or a heat exchanger.

35. (New) A method for cooling a rotor assembly, comprising:
 providing a motor housing and a shaft housed within the motor housing, the shaft having a rotor disposed thereon, the rotor including a plurality of rotor fins projecting radially outward from an outer surface of the shaft, the
5 motor housing having a through inlet hole and a through outlet hole therein;

directing air radially inward from the through inlet hole and into the rotor; and

via the plurality of rotor fins, accelerating air radially outward through the through outlet hole, wherein:

10 the through inlet hole and the through outlet hole are in the same radial plane, and

the radial plane is perpendicular to the motor housing axis.

36. (New) The method of claim 35, wherein:

the plurality of rotor fins project axially from the rotor.